In the Claims:

Please enter the following amended claim set:

1. (Currently amended) An apparatus for measuring vision characteristics of an ~~optical system~~ eye, the apparatus comprising:

focusing means for focusing an optical beam ~~proximate a posterior~~ behind a retina ~~surface~~ of the ~~optical system~~ eye for providing a finite source of secondary radiation on ~~a focal surface~~ the retina, ~~the posterior surface other than the focal surface,~~ which secondary radiation is emitted from the ~~focal surface~~ retina as a reflected wavefront of radiation that passes through the ~~optical system~~ eye;

directing means for directing the reflected wavefront onto a wavefront analyzer; and

a wavefront analyzer for measuring distortions associated with the reflected wavefront.

2. (Currently amended) The apparatus recited in Claim 1, wherein the focusing means comprises a long-focal-length lens for converging the optical beam through a small angle for passing through the pupil and achieving the focus behind the retina and focusing the optical beam ~~on the anterior surface~~ behind the retina, the long-focal-length lens comprising at least a 100-mm lens.

3. (Original) The apparatus recited in Claim 2, wherein the long-focal-length lens has a focal length of at least one-half meter.

4. (Currently amended) The apparatus recited in Claim 1, wherein the focusing means comprises a zoom lens for converging the optical beam through a small angle and varying the focusing of the optical beam onto various anterior surfaces.

5. (Original) The apparatus recited in Claim 1, further comprising a laser for providing the optical beam.

6. (Currently amended) The apparatus recited in Claim 1, further comprising the a shutter operable from a closed position to an open position for controlling an amount of optical beam energy delivered to the ~~optical system~~ eye.

7. (Original) The apparatus recited in Claim 1, wherein the wavefront analyzer comprises:

an opaque plate having an aperture therein for transmitting a portion of the emitted wavefront therethrough; and

a light-sensitive material downstream of and in spaced relation to the opaque plate for receiving the portion of the reflected wavefront projected as a finite image thereon.

8. (Original) The apparatus recited in Claim 7, wherein the aperture comprises an aperture array and wherein the light-sensitive material comprises a CCD array.

9. (Original) The apparatus recited in Claim 8, further comprising a lens carried within each of the plurality of apertures of the aperture array.

10. (Original) The apparatus recited in Claim 1, further comprising polarizing means for polarizing the optical beam.

11. (Original) The apparatus recited in Claim 10, further comprising a polarization beamsplitter for reflecting an S-component of the reflected wavefront and for transmitting a P-component of the reflected wavefront as a polarized wavefront therethrough.

12. (Original) The apparatus recited in Claim 1, further comprising a camera positioned for viewing the focal surface.

13. (Original) An apparatus for measuring vision characteristics of an eye, the apparatus comprising:

a laser for providing an optical beam;

focusing means for focusing the optical beam behind a retina of the eye for providing a finite source of secondary radiation on the retina of the eye, which secondary radiation is emitted from the retina as a reflected wavefront of radiation that passes outward from the eye;

polarizing means placed within a path of the optical beam for transmitting a polarized wavefront therethrough; and

a wavefront analyzer receiving the polarized wavefront for measuring distortions associated therewith.

14. (Currently amended) The apparatus recited in Claim 13, wherein the focusing means comprises a long-focal-length lens for converging the optical beam through a small angle for passing through the pupil and achieving the focus behind the retina and focusing the optical beam ~~on the anterior surface~~ behind the retina, the long-focal-length lens comprising at least a 100-mm lens.

15. (Original) The apparatus recited in Claim 14, wherein the long-focal-length lens has a focal length of approximately one-half meter.

16. (Original) The apparatus recited in Claim 13, further comprising the a shutter operable from a closed position to an open position for controlling an amount of optical beam energy delivered to the eye.

17. (Original) The apparatus recited in Claim 13, wherein the wavefront analyzer comprises:

an opaque plate having an aperture therein for transmitting a portion of the emitted wavefront therethrough; and

a light-sensitive material downstream of and in spaced relation to the opaque plate for receiving the portion of the reflected wavefront projected as a finite image thereon.

18. (Original) The apparatus recited in Claim 17, wherein the aperture comprises an aperture array and wherein the light-sensitive material comprises a CCD array.

19. (Original) The apparatus recited in Claim 18, further comprising a lens carried within each aperture of the aperture array.

20. (Original) The apparatus recited in Claim 13, further comprising a fixation target for viewing by a patient whose eye is being measured, the fixation target assuring that a patient whose eye is being measured is looking along a preferred direction.

21. (Original) The apparatus recited in Claim 13, further comprising a camera positioned for viewing the focal surface.

22. (Original) A method for measuring vision defects of an eye comprising the steps of:

focusing an optical beam anterior of the retina of the eye, but not on the retina, for placing a finite source of secondary radiation on the retina, which secondary radiation is emitted from the retina as a reflected wavefront of radiation that passes through the eye;

projecting the reflected wavefront onto a wavefront analyzer; and

measuring distortions associated with the reflected wavefront.